

**ABSTRACT**

It is an object of the present invention to provide a variable gain amplifier circuit operable with a low power supply voltage and with less noise generated inside the circuit. In the variable gain amplifier circuit, a third MOS transistor is connected between the respective sources of two MOS transistors constituting a differential amplifier circuit and to the gate of the third MOS transistor, and a DC bias voltage for operating the third MOS transistor in a non-saturated region is supplied. If the output voltage of an AM intermediate frequency variable gain amplifier circuit increases, a control voltage for reducing the resistance between the source and drain of the third MOS transistor is applied to reduce the gain of the AM intermediate frequency variable gain amplifier circuit.